FY2006

JOINT FORCES TRAINING BASE
LOS ALAMITOS
California
INSTALLATION ACTION PLAN

Printed March 2005

Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year Installation Restoration Program for an installation. The plan will identify environmental cleanup requirements at each site or area of concern, and propose a comprehensive, installation-wide approach, with associated costs and schedules, to conduct investigations and necessary remedial actions.

In an effort to coordinate planning information between the IRP manager, AEC, installations, executing agencies, regulatory agencies, and the public, an IAP has been completed for JFTB Los Alamitos. The IAP is used to track requirements, schedules and budgets for all major Army installation restoration programs.

All site specific funding and schedule information has been prepared according to projected overall Army funding levels and is, therefore, subject to change. Under current project funding, all remedies will be in place at LAAFRC by the end of FY2008.

The following persons contributed to the formulation and completion of this Installation Action Plan:

California National Guard - Los Alamitos

Clayton Group Services

Engineering and Environment, Inc. for USAEC

ICI for USAEC

National Guard Bureau

Regional Water Quality Control Board

U.S. Army Environmental Center (Restoration Manager)

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Acronyms & Abbreviations

AEDB-R	Army Environmental Database - Restoration
AOC	Area of Concern
AST	Aboveground Storage Tank
ATSDR	Agency for Toxic Substances and Disease Registry
BNA	Base Neutral Acid
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CA ARNG	California Army National Guard
CAP	Corrective Action Plan
CERCLA	Comprehensive Environmental Response Compensation and Liability Act (1980)
COC	Contaminants of Concern
CRP	Community Relations Plan
CRWQCB	California Regional Water Quality Control Board
CTC	Cost-to-Complete
cy	cubic yards
DA	Department of Army
DCE	Dichlorethylene
DERP	Defense Environmental Restoration Program (now ER,A)
DD	Decision Document
DDT	Dichlorodiphenyltrichloroethane
DPVE	Dual Phase Vacuum Extraction
DSERTS	Defense Site Environmental Restoration Tracking System (now AEDB-R)
EE/CA	Engineering Evaluation/Cost Analysis
EPA	(United States) Environmental Protection Agency
ER,A	Environmental Restoration, Army (formerly DERA)
FFA	Federal Facility Agreement
FFO	Fuel Farm Office
FFSRA	Federal Facility Site Remediation Agreement
FS	Feasibility Study
ft	foot
ft^2	square feet
FY	Fiscal Year
gal	gallon
gpd	gallons per day
GRO	Gasoline Range Organics
GW	Groundwater
HRS	Hazard Ranking System
IAP	Installation Action Plan
IRA	Interim Remedial Action
IROD	Interim Record of Decision
IRP	Installation Restoration Program
IWTP	Industrial Wastewater Treatment Plant
JATO	Jet-assisted Take Off
JFTB	Joint Forces Training Base
K	$1,000
kg	kilograms

Acronyms & Abbreviations

LEA	Local Enforcement Agency
LTM	Long-term Management
LTO	Long-term Operation
MCL	Maximum Contaminant Level
mg	milligrams
MMRP	Military Munitions Response Program
MW	Monitoring Well
NAS	Naval Air Station
NASA	National Aeronautical and Space Administration
NE	Not Evaluated
NFA	No Further Action
NGB	National Guard Bureau
NPDES	National Pollutant Discharge Elimination System
NOV	Notice of Violation
NPL	National Priorities List
OB/OD	Open Burning/Open Detonation
OU	Operable Unit
O&M	Operation & Maintenance
PAH	Poly Aromatic Hydrocarbons
PA	Preliminary Assessment
PBC	Performance-Based Contract
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene
POL	Petroleum, Oil & Lubricants
POM	Program Objective Memorandum (budget)
POTW	Public-owned Treatment Works
PP	Proposed Plan
PY	prior year
RA	Remedial Action
RA(O)	Remedial Action - Operation
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal
RFA	RCRA Facility Assessment
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
SARA	Superfund Amendments and Reauthorization Act
SI	Site Inspection
SVOC	Semi-Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TAPP	Technical Assistance for Public Participation
TCE	Trichloroethene

Acronyms & Abbreviations

TCP	Trichloropropane
TPH-D	Total Petroleum Hydrocarbons as Diesel
TPH-G	Total Petroleum Hydrocarbons as Gasoline
TRPH	Total Recoverable Petroleum Hydrocarbons
TTLC	Total Toxic Leachable Concentration or Total Threshold Limit Concentration
ug/l	microgram per liter
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine (formerly USAEHA)
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (now USACHPPM)
USATHMA	United States Army Toxic and Hazardous Material Agency (now USAEC)
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant
yr	year

Installation Information

INSTALLATION LOCALE: Joint Forces Training Base, Los Alamitos (JFTB Los Alamitos) is located in northwestern Orange County, near the Los Angeles County and Orange County boundary line. JFTB Los Alamitos is also located approximately one mile northeast of the intersection of the 1-405 and 1-605 Freeways and occupies approximately 1,300 acres of near flat terrain. The area surrounding JFTB Los Alamitos is composed of six cities and has a population of approximately 600,000 residents.

The facility covers portions of Sections 28,29,30,31,32, and 33. Township 4 South, Range 11 West, based on the San Bernardino Baseline and Meridian. The geographic coordinates of the airfield reference point, which is the approximate center of Los Alamitos, is 33 degrees 47' 24" North Latitude and 118 degrees 03' 04" West I Longitude at an elevation of 21.16' above mean sea level.

INSTALLATION MISSION: JFTB Los Alamitos is a Department of the Army owned facility that is operated under license to the State of California, for the use by the State Military Department, Office of the Adjutant General, and the California Army National Guard (CAANG). JFTB Los Alamitos is the state-coordinating center for the Governor's Office of Emergency Services and is a disaster support area. The facility at JFTB Los Alamitos consists of administrative and engineering offices, security, classrooms, training buildings, chapel, airfield, helicopter maintenance

COMMAND ORGANIZATION: National Guard Bureau

REGULATOR PARTICIPATION:
- California Environmental Protection Agency: Department of Toxic Substances Control, Region 1
- California Regional Water Quality Control Board, Santa Ana Region (CRWQCB)
- Orange County Health Care Agency, Public Health, Environmental Health, Hazardous Materials Surveillance Sections, South Coast Air Quality Management District

NPL STATUS:
- Non-NPL under CERCLA, with off-post contamination.
- Notice of Violations for UST, 1988 (three for the JP-4 fuel farm site). Removed 1999 -
- Lead Regulatory Agency. California Environmental Protection Agency, California Regional Water Quality Control Board assumed responsibility as the lead regulatory agency on 1 July 1997.
- Regulatory Driver: 40 CFR 300 and 10 USC Chapter 2701-2708 and 2810 for Defense Environmental Restoration Program for Non-NPL under CERCLA/SARA
- Regulatory Driver: 40 CFR 260-262 Determination of solid and hazardous wastes, I Storage and Disposal of Wastes
- Regulatory Driver: 1) Clean Water Act, 2) Porter-Cologne Water Quality Control Act and 3) Title 23, Division 3, Chapter 16 (UST regulations) and Title 27, Division 2 (solid waste regulations) of the California Code of Regulations
- Regulatory Driver: 40 CFR 122-125 NPDES Discharge Requirements for on- and off-post discharges

RAB/TRC/TAPP STATUS: In FY95, the Restoration Advisory Board was established and continues to meet on a quarterly schedule.

PROGRAM SUMMARIES:

IRP:

Contaminants of Concern: Trichloroethylene, Methyl Ethyl Ketone, 1,2 Dichloroethylene, Tetrachloroethylene, PCBs, Acetone, Nickel, 4,4 DOE, Dieldrin, Petroleum/Oil/Lubricants, 1, 1-Dichloroethane, 1, 1-Dichloroethylene, 1,2 Dichlorobenzene, Dioxins/Furans, 2-Butanone, Barium, Cadmium, Lead, 4,4-000, 4,4-DDT, Arochlor 1254 and 1260, Benzene

Media of Concern: Soil, Groundwater
Estimated date for RIP/RC: 2009
Funding to Date: (FY89-FY05) $15,830,600
CTC: $14,782,000

MMRP: LATB-001-R-01, Phelan Small Arms Range (belongs to the 63d RSC)

BRAC: N/A

Cleanup Program Summary

HISTORIC ACTIVITY: In the 1920s and 1930s, the site of the current JFTB Los Alamitos was used almost exclusively for agricultural purposes. According to JFTB Los Alamitos records, the War Department purchased large tracts of land in the area of the cities of Los Alamitos and Seal Beach for the development of a naval base. The U.S. Department of the Navy began land clearing and construction of buildings for an air station and weapons depot in early 1941.

JFTB Los Alamitos was originally commissioned as Naval Air Station (NAS) Los Alamitos in May 1942. NAS Los Alamitos played an integral role in the air defense of the west coast of the United States during World War II, as well as serving as a primary training facility for the Navy. Naval fighter, reconnaissance, and light bomber crews were trained and stationed at the facility. Approximately 130 buildings, including housing for 2,200 naval personnel, were built during the early 1940s. Other structures included hangars, equipment and maintenance shops, a laundry, warehouses, mess halls, headquarters buildings, a gymnasium, chapel, and small hospital.

Activities conducted at NAS Los Alamitos included general airfield operations typical of pre-jet propulsion aircraft use. In addition, the air station also had ordinance storage facilities, rifle range, motor repair shops, gasoline and oil stations, aviation fuel dispensing, washracks and grease racks, laundry, and fire station. The air station was equipped with both storm and sanitary sewer systems and a wastewater treatment plant that performed secondary water treatment and included a sludge lagoon. The JFTB Los Alamitos water was supplied by two of eight drinking water wells on-site. Water is currently supplied by the Orange County Water District. During the 1940s, the airfield had underground storage capacity for 160,000 gallons of aviation fuel in approximately 17 underground storage tanks (USTs).

After World War II, the U.S. Department of the Navy continued to make improvements to the airfield, base housing, and maintenance buildings. Control of NAS Los Alamitos changed from the Navy to the National Guard during the 1970s. Because of that change, very few records exist that provide details of facility improvements made from the early 1950s through the 1960s. These improvements included construction and expansion of the airfield runways, taxiways and apron surfaces, new hangars, maintenance buildings, a JP-4 jet fuel tank farm, new warehouse space, and personnel housing.

The NAS was used as a pilot-training station and aircraft-staging facility until 1970, at which time its flying units were relocated to other bases. In November 1972, NAS Los Alamitos was converted to the AFRC Los Alamitos. In August 1973, the CA ARNG took operational control of the facility. In July 1977, the AFRC Los Alamitos was transferred from the Department of the Navy to the Department of the Army by the House Armed Services Committee. Also in 1977, AFRC Los Alamitos was licensed to the state of California by the Department of the Army with the approval of the House Armed Services Committee. In August of that year, the CA ARNG was directed to be the host activity at the facility and was assigned the operational control of the installation. In July 2000, the name of AFRC Los Alamitos was changed to Joint Forces Training Base Los Alamitos. The facility is currently undergoing additional improvements, including the construction of an operations building, hangar, fuel farm, and runway resurfacing.

Cleanup Program Summary

JFTB Los Alamitos has served as host to the following tenant organizations since the early 1970s: Army National Guard units (principally the 40th Infantry Division Mechanized), reserve component units of the Army (principally the 63d ARCOM), Navy, Marine Corps, U.S. Department of Agriculture-Medfly Project, Civil Air Patrol, Army/Air Force Exchange Services and the Sea/Air Credit Union

PROGRAM PROGRESS:

IRP: Continue to execute the RA(O) and developed a PBC strategy. Anticipate PBC award in FY05. The JP-4 and Fuel Farm Office DPVE systems were expanded. The CFR system was rebound tested and determined that closure was appropriate. Completed the RI/FS and IRA/groundwater investigation for four sites.

MMRP: The Phelan Small Arms Range will be transferred in the AEDB-R to the 63d RSC.

JFTB LOS ALAMITOS

INSTALLATION RESTORATION PROGRAM

STATUS: Non-NPL, voluntary cleanup program under CERCLA

AEDB-R SITES/SITES RC: 8/1

AEDB-R SITE TYPES:

1 Fire/ Crash Training Area	1 Contaminated Groundwater
2 Landfills	1 Washrack
1 Storage Area	1 Small Arms Range
1 Underground Tank Farm	

CONTAMINANTS OF CONCERN: POL, VOCs, SVOCs, Metals (Lead), PCBs, Phenols,

MEDIA OF CONCERN: Groundwater, Soil

COMPLETED REM/IRA/RA:

LAAFRC-010 - Subsite: Seabee Compound IRA	$670K
LAAFRC-002 - Subsite: South Landfill	$800K
LAAFRC-003 - CFR Training Pit	$1.71M

IDENTIFIED POSSIBLE REM/IRA/RA:

IRA at LAAFRC-001, 002, 003, 008, 010
RA at LAAFRC-008

TOTAL ER,A FUNDING:

PRIOR YEAR (FY00-FY04):	$13,573,600
CURRENT (FY05):	$ 2,257,000
FUTURE:	$14,782,000

DURATION OF IRP:

Year of IRP Inception:	1989
Year of RA Completion:	2009
Year of IRP Completion:	2034

IRP Contamination Assessment

JFTB Los Alamitos has a total of 11 Army Environmental Database - Restoration (AEDB-R) sites including a fire/crash training area, a landfill, a washrack, a small arms range, a storage area, an underground tank farm, and contaminated groundwater. Twenty-nine areas of concern (AOCs) are distributed within the eleven AEDB-R sites.

AEBD-R #	AOC #		AOC Name	Comments
LAAFRC-001	AOC1	1A	JP-4 Tank Farm	Petroleum-Only AOC
LAAFRC-002	AOC2	2A	Wind Rose and Jet Engine Test Cell	
LAAFRC -002		2B1	North and South Landfills	OU-3
LAAFRC -002		2B2	Former Wastewater Treatment Systems	
LAAFRC -003	AOC3	3A1	New CFR Training Pit and Revetments	
LAAFRC -003		3A2	West End of the Flightline	
LAAFRC -003		3A3	Old CFR Training Pits	
LAAFRC -008	AOC4	4A	Building 158	Petroleum-Only AOC
LAAFRC -008		4B	Former Aviation Fuel Farm	Petroleum-Only AOC
LAAFRC - 008		4C	Former UST Sites	Petroleum-Only AOC
LAAFRC -010	AOC5	5A	Seabee Compound	
LAAFRC -008		5B	Fuel Farm Office	
LAAFRC -008		5C1	Nosedock 61 Hangar	Petroleum-Only AOC
LAAFRC -010		5C2	Nosedock 61 Clarifier	Petroleum-Only AOC
LAAFRC -010		5D1	ECS16	
LAAFRC -010		5D2	Vehicle Depot Clarifier	
LAAFRC -010		5D3	OMS-8 Clarifier	
LAAFRC -010		5D4	40th Military Police	
LAAFRC -005	AOC6	6A	Munitions Bunkers	
LAAFRC -008		6B1	Motor Pool	
LAAFRC -008		6B2	Flightline Pads 1 and 2	
LAAFRC -010		6C1	Hangar2	
LAAFRC -010		6C2	Paint Spray Booth	
LAAFRC -010		6D	Gymnasium Clarifier	
LAAFRC -008		6E	Hangar 1	
LAAFRC -005	AOC7	7A	Former Rifle Range	Soil Only (OU-2)
LAAFRC -011	AOC8	8A	Pesticide Use Areas	Soil Only (OU-2)
LAAFRC -008	AOC9	9A1	Building 34	Petroleum-Only AOC
LAAFRC -010	AOC9	9A2	Building 35	

To facilitate data evaluation and remedial design, the base has been divided into three Operable Units (OUs): water (OU-1), soil (OU-2), and landfill water and soil (OU-3). OU-1 consists of all surface water and groundwater at the JFTB Los Alamitos with the exception of the landfill. OU-2 consists of all soil at the JFTB Los Alamitos with the exception of the landfill. OU-3 consists of the landfill.

Chlorinated solvents and petroleum-related contaminants are the primary contaminants of concern at JFTB Los Alamitos. In 1994, a preliminary assessment/site inspection (PA/SI) indicated widespread chlorinated solvents in shallow groundwater at ten AOCs. Petroleum-only related contaminants were detected at seven AOCs. Eleven AOCs were found to have impacted the shallow groundwater with both solvents and petroleum-related contaminants.

In August of 1993, results of the PA conducted at the JFTB Los Alamitos were reported in the *Preliminary Assessment at the Joint Forces Training Base Los Alamitos, California,* (Clayton, 20 August 1993). The PA was conducted to assess the potential contamination of groundwater, surface water, soil, and air and to assess the need for additional site assessment actions. The PA Project Team inspected the facility, reviewed files, interviewed JFTB Los Alamitos staff, documented onsite observations, and evaluated existing data available for the facility. Results of the PA indicated that past and present operations at the site have involved use of materials that are now considered hazardous. The PA recommended that an SI be conducted.

In May 1996, results of the SI were reported in the *Site Inspection at the Joint Forces Training Base Los Alamitos, California* (Clayton, 9 May 1996). The SI was conducted to evaluate sites of concern that were identified during the PA. The SI included the collection of a limited amount of groundwater, surface water, and soil samples for laboratory analysis. The SI reported contamination present in nine AOCs and recommended a remedial investigation/feasibility study (RI/FS).

A phased approach has been used in conducting this RI. The field investigation was divided into three phases. This phased approach allows for flexibility and increased efficiency and effectiveness of data collection, with the goal of informed remedial action decisions.

The field investigation portion of Phase I was conducted from May of 1996 through early 1997. Phase I field investigation included the collection of a large amount of groundwater, surface water, and soil samples for laboratory analysis. Preliminary review of the Phase I data indicated that a Phase II field investigation is required to complete the definition of the nature and extent of contamination for all matrices sampled at the JFTB Los Alamitos. Phase II field sampling and reporting will be conducted in two parts: Phase IIA and IIB in a sequential manner. Each of the three OUs will be sampled and evaluated separately. Phase IIA and IIB and the Health Risk Assessment field sampling was complete in November 2001 and the reporting is planned for completion in FY02.

The city of Los Alamitos is in the Central Basin of the Los Angeles Coastal Basin in an area that, for purposes of political division, is termed the Orange County Groundwater Basin. Local water purveyors within the study area obtain more than 70 percent of their total water needs from groundwater production. Groundwater is also used for agricultural purposes.

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Fourteen drinking water wells are within a one-mile radius of the JFTB. None of these wells produce water from the shallow aquifer that underlies the JFTB. However, production from deeper aquifers does not preclude these wells from potential contamination from the JFTB. In addition, two on post irrigation wells produce water from less than 200 feet below ground surface (bgs).

Operable Units

To facilitate data evaluation, reporting, and remedial design, the facility has been divided into three OUs: water (OU-1), soil (OU-2), and landfill water and soil (OU-3). OU-2 consists of all surface and subsurface soil at the JFTB Los Alamitos, with the exceptions of the Landfills and the areas impacted solely by petroleum hydrocarbons (petroleum-only Areas).

The status of all phases for all OUs is as follows:

- OU-1 and OU-2 Mid-term Report (Phase IIA) were be submitted in August 2001.
- OU-1 and OU-2 Phase lIB field sampling is completed.
- OU-3 Phase IIB field sampling is completed.
- OU-1 and OU-2 Draft Overall Phase II reports (including HRA) is scheduled for completion in September 2001.
- OU-3 Draft Overall Phase II reports (including HRA) is scheduled for completion in October 2002.
- OU-3 Draft EE/CA Report is scheduled for completion in April 2002.
- Draft Feasibility Study Report is scheduled for completion in March 2003.
- Draft RI/FS Report and Proposed Plan (Army Decision Document) are scheduled for completion in December 2004.

CLEANUP EXIT STRATEGY:

The RA(O) will continue under a one year contract and the PBC will be implemented in FY06. It is expected that all RA(O) activities, with the exception of LAAFRC-010 will be completed by FY08. LAAFRC-010 is expected to continue RA(O) activities until FY13 when the cleanup objectives are expected to be achieved. LTM activities that include groundwater monitoring, tree maintenance, and cover maintenance will continue indefinitely.

PREVIOUS STUDIES

TITLE	AUTHOR	DATE
Alamitos Barrier Project Report	LA County Flood Control District and Orange County Water District	1973-74, 1985-86
Solid Waste Assessment Test	Groundwater Consultants	May-88
Air Quality Solid Waste Assessment Test	U.S. Army Environmental Hygiene Agency	Dec-88
Hydrologic Assessment Report	Schafer Dixon Associates	Dec-88
Point Paper of Hydrogeological Assessment Report	Schafer Dixon Associates	Dec-88
Investigation of Buried Soil Contamination	Schafer Dixon Associates	Dec-88
Environmental Consideration, Aviation Support Facility	The Mark Group, Inc.	Sep-89
Solid Waste Assessment Test Proposal	CH2M Hill	Nov-89
Hydrogeological Assessment Report	Schafer Dixon Associates	Jun-90
Site Investigation Report for Buildings 2, 25, 27, 37, 43, 158, JP-4 Tank Farm	West and Hansen Engineers, Inc.	Jun-90
Interim Guidance for Preparation of a Preliminary Endangerment Assessment Report	California Department of Toxic Substances Control	Jun-90
Supplemental Landfill Investigation	Environmental Management Corporation	Apr-91
Remediation Specifications for Buildings 2, 25, 27, 37, 43	West and Hansen Engineers, Inc.	Nov-91
Site Investigation at Building 6 Underground Storage Tank	West and Hansen Engineers, Inc.	Nov-91
Los Alamitos Army Airfield, Airfield Operations and Activity Annual Report		1992
Phase II Site Investigation Underground Tank Sites at Buildings 34 and 158; Draft	West and Hansen Engineers, Inc.	Mar-92
Phase II Site Investigation of Underground Tank Site, JP-4 Tank	West and Hansen Engineers, Inc.	Mar-92
Site Assessment Report at the JP-4 Fuel Storage Complex	Geo Research	May-92
Groundwater Monitoring and Well Installation - CFR Test Pit	Brown and Caldwell Consultants	Jul-92

PREVIOUS STUDIES

TITLE	AUTHOR	DATE
Subsurface Investigation Report for Buildings 34 and 158	Clayton Environmental Consultants, Inc. (Clayton)	Jul-92
UST Locations	Jaykim Engineers	Aug-92
Initial Findings Asbestos Study Services	CTL Environmental Services	Nov-92
Preliminary Assessment	Clayton	Aug-93
Quarterly Groundwater Monitoring Reports	Clayton	1993, 1994, 1995
Work Plan for JP-4 Extraction Trench	Clayton	Jun-95
Work Plan for Interim Removal Action for Containment at JP-4 Tank Farm	Clayton	Oct-95
Work Plan for Interim Removal Action for Containment at Building 158	Clayton	Dec-95
Draft Final Site Inspection Report	Clayton	May-96
Draft Final Remedial Investigation Work Plan	Clayton	Jul-96
Work Plan for Interim Removal Action at Building 34/35	Clayton	Dec-96
Draft Final Dual Phase Work Plan	Clayton	Jan-97
Work Plan for Interim Removal Action	Clayton	Apr-97
Site and Safety Health Plan for Interim Removal Action	Smith Environmental	May-97
Final Tank Closure Report	Morrison Knudsen Corporation	May-97
Draft Air Emissions Inventory Report	Clayton	Jun-97
Final Environmental Assessment/Initial Study and Finding of No Significant Impact/ Negative Declaration: Multiple Construction Project	Chambers Group	Jun-97
Draft Work Plan for the JP-4 Tank Farm Interim Removal Action	Clayton	Jun-97
Underground Storage Tank Closure Report for JP-4 Tank Farm	Clayton	Jul-97
Draft Interim Removal Action Work Plan for Dual Phase Vacuum Extraction at the New CFR Training Pit, Seabee Compound and Northern Landfill	Clayton	Aug-97
First Quarter 1997 Groundwater Monitoring Report	Clayton	Sep-97
Work Plan for the JP-4 Tank Farm Interim Removal Action	Clayton	Oct-97
Tracer Tight Leak Test of One Cut and Cover Tank and 1000 Linear Feet of Pipeline	Tracer Research Corp.	Dec-97
Second Quarter 1997 Groundwater Monitoring Report	Clayton	Jan-98
Third Quarter 1997 Groundwater Monitoring Report	Clayton	Jan-98
Fourth Quarter 1997 Groundwater Monitoring Report	Clayton	Feb-98

PREVIOUS STUDIES

TITLE	AUTHOR	DATE
Draft Final Interim Removal Action Work Plan for Dual Phase Vacuum Extraction at the New Crash Fire Rescue Training Pit, Seabee Compound, and Northern Landfill	Clayton	Feb-98
Results of Soil Gas Survey and Limited Geotechnical Analyses for the Northern Landfill	Clayton	Apr-98
Executive Summary 1997 Annual Report	Clayton	Apr-98
First Quarter 1998 Groundwater Monitoring	Clayton	May-98
Final 1997 Annual Groundwater Report for JFTB	Clayton	Aug-98
Final 1997 Annual Groundwater Report for the JFTB	Clayton	Jun-98
Soil Remediation Progress Report	Clayton	Jun-98
DPVE Remediation System Installation, Start Up and First Quarter 1998 Report Building 35	Clayton	Jun-98
Draft Final Remedial Investigation Report, Operable Unit No. 1	Clayton	Jul-98
Draft Remedial Investigation Workplan for Operable Unit No. 1, Phase II	Clayton	Jul-98
Soil Remediation Progress Report at JFTB	Clayton	Aug-98
Final 1997 Annual Groundwater Monitoring Report	Clayton	Aug-97
Water Discharge Monitoring Report, Order No. 96-18-018, NPDES No. CAG 918001, July 1998 at the JFTB	Clayton	Aug-98
Interim Removal Action Report for the Second Quarter 1998 at Building 35, JP-4 Tank Farm, JP-4 Well Containment, and Building 158 Remediation Systems	Clayton	Sep-98
Draft Underground Storage Tank Closure Report	Clayton	Sep-98
Water Discharge Monitoring Report, August 1998 for the IRA at JFTB, Order No. 96-18-018, NPDES No. CAG 918001	Clayton	Oct-98
Draft Remedial Investigation Report for Operable Unit No. 2 Phase II at JFTB - Volume II	Clayton	Oct-98
First Quarter 1998 Groundwater Monitoring	Clayton	
Underground Storage Tank Closure Report for JFTB	Fluor Daniel	Oct-98
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001 September 1998	Clayton	Oct-98
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001 October 1998	Clayton	Nov-98
Draft Third Quarter 1998 Groundwater Monitoring at JFTB	Clayton	Dec-98
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Nov-98
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Dec-98
Water Discharge Monitoring Report, Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Jan-99
Draft Work Plan for Destruction of Three Wells at JFTB	Tetra Tech	Jan-99

PREVIOUS STUDIES

TITLE	AUTHOR	DATE
Draft Work Plan and Health and Safety Plan for Production Well Destruction	Tetra Tech	Jan-99
Site Health and Safety Plan for Remedial Investigation/Feasibility Study and Remediation Operation and Maintenance	Clayton	Jan-99
Fourth Quarter 1998 Groundwater Monitoring	Clayton	Feb-99
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Feb-99
Final Work Plan and Health and Safety Plan for Production Well Destruction	Tetra Tech	Mar-99
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Mar/Apr-99
Draft Work Plan and Health and Safety Plan for Phase II Remediation Investigation at Building 158	Tetra Tech	May-99
First Quarter 1999 Groundwater Monitoring	Clayton	Jun-99
Bio-Pile Remediation Work Plan	Tetra Tech	Jun-99
Draft Well Abandonment Report, Production Well Destruction	Tetra Tech	Jun-99
Risk Assessment Data Evaluation Part I Data Gap Analysis	Clayton	Jun-99
Draft – Site Specific Workplan for Removal and Disposal of One 120-Gallon UST, Installation of One 125-Gallon AST	Ecology Control Industries	Jun-99
Engineering Evaluation/Cost Analysis Revised Workplan, Preliminary Draft	Brunsing Associates	Jul-99
IRA Report for the 4th Quarter 1998 at Building 35, JP-4 Tank Farm, JP-4 Containment, Building 158 Groundwater Treatment, and Seabee Compound Remediation Systems	Clayton	Jul-99
Draft, Initial Study/Mitigated Negative Declaration 99-1, Seal Beach Boulevard/I-405 Overcrossing Widening Project	City of Seal Beach	Jul-99
Operation and Maintenance Plan for Remediation Systems	Clayton	Oct-99
Adoption of Negative Declaration 99-1, Seal Beach Boulevard/I-405 Overcrossing Widening Project and Determination of General Plan Consistency	Public Hearing	Oct-99
Draft Second Quarter 1999 Groundwater Monitoring Report	Clayton	Nov-99
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001, August, September, and October 1999	Clayton	11/30/1999
Final Work Plan and Health and Safety Plan for Phase II Remedial Investigation at Building 158	Tetra Tech	Jan-00
Draft Final Remedial Investigation Report for Operable Unit No. 2 Phase I	Clayton	Jan-00

PREVIOUS STUDIES

TITLE	AUTHOR	DATE
Draft Biopile Treatability Study	Tetra Tech	Feb-00
Sampling and Analysis Plan for Engineering Evaluation/Cost Analysis North and South Landfills	Brunsing Assoc	2/5/2001
Phase II-A Tech Memo for Remedial Investigation of OU No. 2	Clayton	3/30/2001
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Nov, Dec-00 & Jan-01
Draft Interim Removal Action Work Plan for the Dual Phase Vacuum Extraction at the FFO	Clayton	May-01
Draft 2000 Annual Groundwater Report	Clayton	May-01
Baseline Health Risk Assessment Work Plan	Clayton	Feb-01
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001	Clayton	Feb, Mar, Apr-01
Final – Phase II-A Tech Memo for Remedial Investigation of OU No. 2	Clayton	May-01
Tech Memo – Annual Interim Removal Action Report for Year 2000 at Bldg. 35, JP-4 Tank Farm, JP-4 Containment, Bldg. 158 Groundwater Treatment, and Seabee Compound Remediation Systems, Volume I	Clayton	Jun-01
Tech Memo – Annual Interim Removal Action Report for Year 2000 at Bldg. 35, JP-4 Tank Farm, JP-4 Containment, Bldg. 158 Groundwater Treatment, and Seabee Compound Remediation Systems, Volume II	Clayton	Jul-01
Tech Memo – Annual Interim Removal Action Report for Year 2000 at Bldg. 35, JP-4 Tank Farm, JP-4 Containment, Bldg. 158 Groundwater Treatment, and Seabee Compound Remediation Systems, Volume III	Clayton	Jul-01
First Quarter 2001 Groundwater Monitoring	Clayton	Jul-01
Second Quarter 2001 Groundwater Monitoring	Clayton	Aug-01
Quality Assurance Project Plan North/South Landfills Subsurface Investigation	Brunsing Associates	Aug-01
Draft Final Remedial Investigation Report for OU No. 3, Phase I at LAAFRC, Volume I & II	Clayton	Aug-01
Water Discharge Monitoring Report Order No. 96-18-018 NPDES No. CAG 918001, May, June and July 2001	Clayton	Sep-01
Draft Phase II Remedial Investigation Building 158, Volume I - III	Tetra Tech	Oct-01
Third Quarter 2001 Groundwater Monitoring	Clayton	Oct-01

JFTB LOS ALAMITOS

INSTALLATION RESTORATION PROGRAM

SITE DESCRIPTIONS

LAAFRC-001
JP4 UST AREA
(INCLUDES FUEL FARM OFFICES)

OPEN SUBSITES:

SOURCE AREA

CONTAINMENT AREA

LAAFRC-001
JP4-UST AREA – SOURCE AREA

SITE DESCRIPTION

The JP-4 Tank Farm area is located in the northwest quadrant of the JFTB in an area where groundwater levels fluctuate between 9 and 12 feet below ground surface. The JP-4 area formerly contained three steel 210,000-gallon aviation gasoline and jet fuel underground storage tanks (USTs). Releases from the USTs and product lines resulted in up to 5 feet of floating product in the groundwater table. The discovery of the releases resulted in an Interim Removal Action (IRA), which included the construction of an interceptor/product extraction trench in 1995 to capture contamination down gradient (west) of the source areas. Since June 1996, no measurable thickness of product has been noted which demonstrates the effectiveness of the IRA process.

STATUS

RRSE: High

CONTAMINANTS: POL, Benzene

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199505
RI	199605	200609
IRA	199503	199509
RA(C)	199801	199802
RA(O)	199803	200909

RC: 200909

To remove the dissolved-phase contaminants in the groundwater and soil, a dual phase vacuum extraction/air sparging system (DPVE) was installed in February 1998. The DPVE system provides a way to simultaneously treat soil and groundwater by applying a high vacuum through the wells and effectively lowering the water table and extracting contaminants from the soil and groundwater. At the JP-4 Tank Farm DPVE system, the contaminated air extracted from the soil pore spaces is heated and contaminants are destroyed utilizing a propane burner and a catalytic oxidizer. The contaminants in the groundwater are extracted and absorbed in activated carbon vessels

The system is comprised of 26 extraction wells and 37 air sparging wells. The contaminants of concern consist of petroleum hydrocarbons including benzene, toluene, ethylbenzene, and xylenes (BTEX). The treatment system, sized to optimize overall capital and operational costs, handles roughly a third of the extraction wells at any given time, with an accompanying extension of total system operation time. To date it is estimated that roughly 75-80% of the total contaminant mass may have been removed, which represents most of the more easily recoverable material.

Groundwater quality at the site is monitored on a quarterly basis in up to thirty-four monitoring wells located throughout the JP-4 Tank Farm area. Every quarter a report is submitted summarizing all the groundwater monitoring activities and system's operations.

Since the second quarter of 2002, the remediation efforts have focused almost exclusively in the northeast section of the original plume, the only portion of the site, which remains with elevated concentrations of hydrocarbons. Since then, the northeastern perimeter wells showed an initial increase in concentrations, that is beginning to decrease, but remains elevated.

A hydropunch investigation to delineate the extent of the hydrocarbons plume in this section of the JP-4 was conducted and three new wells were installed in December 2003 and January 2004. The

hydropunch investigation effectively delineated the extent in the northeast section of the site, and the wells will replace two wells lost due to facility-related activities and, once connected to extraction wells, expedite the remediation in this zone. The newly installed wells and a well located in the northeastern perimeter, were converted to extraction wells.

CLEANUP STRATEGY

Based on the current concentrations and trends observed in the most impacted zone, two years of DPVE operation will be needed for closure

LAAFRC-001
JP4-UST AREA – CONTAINMENT AREA

SITE DESCRIPTION

The JP-4 Containment system consists of a network of eight shallow groundwater extraction wells located down gradient (southwest) of the JP-4 Tank Farm plume. The wells were installed in December 1995 to provide a hydraulic barrier between the JP-4 Tank Farm plume and offsite residences. The system extracts approximately one million gallons of groundwater per year, which is treated by activated carbon vessels.

Groundwater quality is monitored on a quarterly basis and results indicate that the barrier is providing an effective hydraulic barrier.

As a long-term solution for this IRA, a phytoremediation barrier (i.e., a tree barrier) was planted in October 2001 to extract and treat groundwater in this area. The phytoremediation barrier consists of one Hundred and sixty Poplar trees in three rows spaced fifteen feet apart.

STATUS

RRSE: High

CONTAMINANTS: POL, Benzene

MEDIA OF CONCERN: Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199505
RI	199605	200609
IRA	199304	200709
RA(C)	200409	200709
RA(O)	200409	200909
LTM	200910	202509

RC: 200909

The water used to irrigate the trees is obtained from the treated discharge of the pump and treat system currently in use. Last summer (2003) all the groundwater extracted by the mechanical JP-4 containment system was utilized to irrigate the Poplar trees after the water was treated. As the trees mature, they will begin to extract groundwater from the aquifer and essentially produce a hydraulic barrier.

The trees are monitored with sap flow sensor analyzers to determine the amount of water uptake on each tree (up to six trees are monitored at one time). Although the trees have not reached significant levels of extraction, it is expected that they will replace the mechanical system in three years.

CLEANUP STRATEGY

Continue to conduct sap flow monitoring until significant levels are reached. Conduct tree sampling (core, leaves, bark, and roots) once significant extraction levels are reached. The mechanical operations may be discontinued in September 2007; however, tree maintenance and extraction will continue indefinitely.

LAAFRC-002
LANDFILL/SEWAGE TREATMENT
JET ENGINE TEST

OPEN SUBSITES:

- **Landfill Closure (Former North Landfill)**
- **Landfill Interim Removal (Former North Landfill)**

CLOSED SUBSITES (SEE RC SITES):

- **Former Wastewater Treatment System**
- **Jet Engine Test Cell**
- **Aircraft Buffer Zone (Former South Landfill)**

LAAFRC-002
LANDFILL/SEWAGE TREATMENT/JET ENGINE TEST LANDFILL CLOSURE

SITE DESCRIPTION

The Landfill occupies 28 acres east of the Perimeter Road in the western portion of the JFTB. Topographic elevations in the Landfill area range from 22 in the north to 17 feet above msl in the south. Between the 1940s to late 1980s, a variety of waste material were generated and potentially disposed in the Landfill. Although there are not manifests that describe the nature and exact amounts of discarded materials, it is estimated that 117,000 cy of household, industrial and military wastes were placed in the 25-acre Landfill. The estimated volume of wasted mixed with soils is 176,000 cy.

In December 1985, the State Water Resources Control Board classified all solid waste disposal sites according to their potential to adversely impact the local groundwater quality. The Landfill was listed among the highest ranked sites for the 1986 review period. Over the years, numerous investigations have been performed at the Landfill. The conclusion reached by most of the investigators was that groundwater under the Landfill area has been impacted by Landfill leachate, and it appears that the Landfill material has been in contact with the top of the aquifer. Furthermore, it was determined that contaminant concentrations detected in groundwater are likely to impact JFTB operations and/or result in off-site contaminant migration that could adversely impact public health. (Interim action has prevented any off-site impact). Groundwater concentrations in sentinel wells between the landfill and the installation boundary exceed MCLs. The goal of the final remedy will be dependent upon the alternative proposed by the winning bidder in the PBC to be awarded.

STATUS

RRSE: High

CONTAMINANTS: VOCs, PCBs, Fuels, Phenols mixed with Non-Hazardous Debris

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	199604	200310
RD	200408	200505
IRA	199909	200708
RA(C)	200408	200709
RA(O)	200409	200709
LTM	200710	202509

RC: 200709

CLEANUP STRATEGY

The goal is to obtain regulatory closure of the Landfill.

Specific steps may include:

- Submit Decision Document for approval
- Release EE/CA for 30 day public review
- Incorporate public review comments
- Prepare work plan for implementation of final selected remedy
- Prepare construction documents, i.e., plans and specifications
- Obtain approvals for the work plan and permits to proceed with construction
- Implement post-closure monitoring and maintenance

LAAFRC-002
LANDFILL/SEWAGE TREATMENT/JET ENGINE TEST LANDFILL INTERIM CLOSURE

SITE DESCRIPTION

In April 2000, a dual phase vacuum extraction (DPVE) system was installed and began operation in the southern portion of the Landfill to remove groundwater contamination consisting of volatile organic compounds. At this IRA, groundwater monitoring is conducted within the plume area to track remedial progress as part of the IRA process and quarterly groundwater monitoring is conducted in those Landfill wells not impacted by the IRA. Once remediation is completed, a new monitoring plan will be developed for the IRA area.

An statistical analysis was conducted in the 2003 Annual report, and based on the analysis conducted, both wells exhibited downward trends of TCE concentrations. In the first quarter of 2004 the TCE concentrations for wells EW-1s and EW-8s were 27 ug/L and 337 ug/L respectively. Wells EW-1d and EW-2d in the lower portion of the aquifer have also shown elevated levels of TCE and will require further treatment.

There were no perimeter wells in the landfill that exhibited measurable concentrations of VOCs in 2003. In the third quarter of FY2004, a deep (170-foot) well was installed down gradient of the DPVE area (the second well at this depth in the vicinity), and did not exhibit any contaminant concentrations.

In December 2003 and January 2004, two Point of Compliance wells were installed. Chlorinated solvents have been consistently detected in groundwater beneath the inactive landfill at levels significantly above MCLs. In addition, the landfill is undergoing compliance monitoring for landfill gases (methane) on a quarterly basis to meet LEA (local enforcement agency) requirements.

CLEANUP STRATEGY

The system will continue to operate until September 2007 in the wells of concern, mainly EW-1s, EW-1d, EW-2d and EW-8s. An evaluation will be conducted to assess the possibility to utilize only a groundwater pump and treat system.

LAAFRC-003
CFR, REVETMENTS, AIRCRAFT WASH

OPEN SUBSITES:
- **CFR TRAINING AREAS**
- **REVETMENTS 117, 118 & 119**
- **WEST END OF FLIGHT LINE**

CLOSED SUBSITES (SEE RC SITES):
- **OLD CFR TRAINING PITS**

LAAFRC-003
CFR, REVETMENTS, AIRCRAFT WASH, CRASH FIRE RESCUE (CFR) TRAINING AREAS

SITE DESCRIPTION

The Crash Fire Rescue (CFR) area is located west of the airfield and south of the Medfly Compound, in the western area of the JFTB. From 1983 to 1987 three CFR areas were used to conduct fired rescue training operations. All three CFR areas have been decommissioned. Only the newest one is part of this multiple area IRA. It is estimated that approximately 500 to 1, 000 gallons of fuel were used during each training exercise and that approximately six sessions of training were held each week throughout the five-year life of the new CFR area.

Subsurface investigations at the CFR area revealed elevated concentrations of petroleum hydrocarbons and volatile organic compounds (VOCs) including tetrachloroethene, trichloroethane, dichloroethane, and dichlorothene.

STATUS

RRSE: High

CONTAMINANTS: TCE, PCE, Dichlorethylene (DCE), PCBs, POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	199606	200412
IRA	199611	200609

RC: 200609

A Dual Phase Vapor Extraction system (DPVE) was installed in October 1999 to remove the groundwater contamination. The system consists of 28 wells configured as nested pairs in the upper and lower portion of the shallow aquifer. The VOC plume in the CFR area has shown a significant decrease as a result of the DPVE. Hydropunch samples were conducted to further investigate the extent of the CFR plume in the west and southwest section of the CFR site in January 2004. The first round of hydropunch samples to the southwest resulted in concentrations comparable to those in the CFR wells; and even lower as they went further south-southwest; however, the second “step out” round to the south-southwest (closer to the Landfill), resulted in concentrations an order of magnitude higher than those observed in any of the CFR wells.

Monitoring well Q5-2 was installed December 2003 adjacent to the hydropunch sample that exhibited the highest TCE concentration (243 µ/L). It exhibited a concentration of 61.2 µ/L of TCE and 33.2 µ/L of PCE. These concentrations are higher than any other CFR wells. Due to the distance of this well relative to the extraction system (approximately 250 feet), this contamination is beyond the CFR treatment radius of influence, and appears to be related to a Landfill source, since the contaminants and concentrations appear in the nearby Landfill wells.

On the other hand, the 44 extraction and monitoring wells that are used to measure the remediation progress at CFR have shown a significant decrease in VOCs and in the January 2004 sampling episode, only one well exhibited a concentrations slightly above MCLs. As a result of this continued and sustained decrease in concentrations, a closure plan, including rebound testing was drafted and presented to the CRWQCB in May 2004. Completed rebound testing for shut down.

LAAFRC-003
CFR, REVETMENTS, AIRCRAFT WASH, CRASH FIRE RESCUE (CFR) TRAINING AREAS (CONT.)

CLEANUP STRATEGY

Prepare document requesting closure and submit to RWQCB. In the second quarter of 2005, contracted work will retrofit and mobilize treatment system components for Building 158 remediation.

LAAFRC-003
CFR, REVETMENTS, AIRCRAFT WASH REVETMENTS 117, 118 & 119

SITE DESCRIPTION

There are three revetments, or concrete wall-like structures, west of the flightline maintenance area and south of Enterprise Avenue, that approximate to the newer CFR Training Pit. The Revetments have been used as a storage depot for - 200 drums of unknown hazardous waste, construction material and other refuse-related debris. According to JFTB personnel, recyclable metals, solvents, oils (motor, PCB, transmission/aviation), and possibly munitions were stored in the Revetments. Lead has been found in soil at two locations in concentrations that will require action.

Revetment sites 117 and 119 passed Tier 2 risk assessment screening.

STATUS

RRSE: High

CONTAMINANTS: TCE, PCE, Dichlorethylene (DCE), PCBs, POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	199606	200412
IRA	199611	200709
LTM	200810	201209

RC: 200809

CLEANUP STRATEGY

Revetment site 118 passed Tier 2 risk assessment screening, but has a small elevated total lead or "hot spot" area (-65 cy) above state action (state hazardous waste) levels will be removed.

LAAFRC-003
CFR, REVETMENTS, AIRCRAFT WASH WEST END OF FLIGHT LINE

SITE DESCRIPTION

The West End of the Flightline includes the concrete-paved aircraft maintenance area and a grass-covered area directly west of the maintenance area, which was, in the past, used as a staging area for fuel bladders, and aircraft wash area. Fuel bladders (10,000 gallon capacity) were stored at this site from the mid to late 1960s. Fuel bladder use and storage was discontinued in early 1970. During the 1950s and 1960s, aircraft maintenance and cleaning was commonly done using solvents to facilitate engine/body cleaning. As a result of required sampling at the landfill (Appendix 1), an emergent chemical 1,2,3 trichloropropane has been discovered at this site above MCLs. Additional investigation (funded at Site LAAFRC-010) and possible remediation might be required. A Baseline Health Risk Assessment has been conducted and this site passed Tier 2 risk assessment screening.

STATUS

RRSE: High

CONTAMINANTS: TCE, PCE, Dichlorethylene (DCE), PCBs, POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	199606	200412
IRA	199611	200709

RC: 200709

CLEANUP STRATEGY

1,2,3-trichloropropane concentrations in groundwater will likely require remedial action. Existing DPVE systems near this site can be modified.

LAAFRC-005
RIFLE RANGE/AMMO STORAGE

LAAFRC-005
RIFLE RANGE/AMMO STORAGE

SITE DESCRIPTION

The Former Rifle Range, located in the northwest corner of what is now the base golf course, was in operation from the early 1950s to the early 1960s and was used by Navy personnel. After the range was closed, the soil backstop, filled with years of spent rounds, was spread over the golf course area. The possible contaminant is lead, with the amount of lead spread over this area unknown. The sampling activities were designed to detect possible lead contamination in the area. The suspect areas of the golf course were divided into grids and sampled by grid square.

STATUS

RRSE: High

CONTAMINANTS: Lead

MEDIA OF CONCERN: Soil

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	199801	199906
IRA	200610	200709

RC: 200709

At the Former Rifle Range, 68 surface soil samples were collected from the 1 and 2 foot bgs depths and were analyzed for TTLC (total threshold limit concentration) lead. Of these samples, only one reported lead at a concentration exceeding the soil standard of 50 mg/kg. One sample reported lead at 14,000 ppm.

During the RI, 25 surface soil samples were collected from the 1 to 3 foot bgs depths and were analyzed for organic lead. Of these samples, all results were reported as non-detect and hence, none were reported above the soil standard.

To identify the lateral and vertical extent of the lead contamination identified during the SI, OU-2 Phase II sampling was completed in August 2002. Composite soil samples from the 1 to 3 foot bgs depth were be collected from nine locations (near the elevated SI sample number S-A17-1). All samples will be analyzed for TTLC lead. The sample results indicated areas of lead are not significant threat of human or ecological health. A risk analysis is being conducted this FY.

The Former Rifle Range, located in the northwest corner of what is now the base golf course, was in operation from the early 1950s to the early 1960s and was used by Navy personnel. After the range was closed, the soil backstop, filled with years of spent rounds, was spread over the golf course area. Sampling activities were designed to detect possible lead contamination in the area. Lead was found in the soil at a concentration of 17,000 mg/kg.

CLEANUP STRATEGY

This site will be reopened in AEDB-R to fund the removal. The Rifle Range area passed Tier 2 risk assessment screening, but a small elevated total lead or "hot spot" area (~130 cy) above action levels will be removed.

LAAFRC-008
UST-BASEWIDE PROGRAM

OPEN SUBSITES:
- **FUEL FARM OFFICE**
- **FLIGHTLINE PADS**
- **MOTOR POOL**
- **BUILDING 158**

CLOSED SUBSITES (SEE RC SITES):
- **HANGAR 1**
- **BUILDING 34**

LAAFRC-008
UST-BASEWIDE PROGRAM
FUEL FARM OFFICE

SITE DESCRIPTION

The Fuel Farm Office (FFO) is located on Constitution Avenue, south of the Seabee Compound. Until recently it was used for administrative activities for aircraft refueling personnel. Presently, jet fuel is not dispensed directly from this building; however, in the past, two JP-4 fuel lines ran from the JP-4 Tank Farm to two 6,000-gallon underground storage tanks (USTs) located approximately 80 feet from the office. The USTs were removed in 1991.

An IRA at the FFO was initiated based on data obtained from soil and groundwater testing collected during the Site Inspection (SI) and Remedial Investigation (RI). The primary contaminants of concerns encountered during site investigations were volatile organic compounds (VOCs) including tetrachloroethene, trichloroethene, 1,2dichloroethane, naphthalene, benzene, toluene, xylenes, and total petroleum hydrocarbons in the gasoline range.

STATUS

RRSE: High

CONTAMINANTS: POL, VOCs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199304
SI	199408	200012
RI	199912	200412
IRA	199603	200609
RA(C)	200408	200709
RA(O)	200408	200809
LTM	200810	201209

RC: 200809

The DPVE remediation system was commissioned at the FFO in June 2002 and is comprised of a network of 23 nested pairs of extraction wells. The treatment system, sized to optimize overall capital and operational costs, handles roughly a fourth of the extraction wells at any given time, with an accompanying extension of total system operation time. To date it is estimated that roughly 10% of the total contaminant mass may have been removed.

The system utilizes down-hole submersible pumps in combination with a surface extraction blower to remediate soil and groundwater. The northern section of the extraction network overlaps with the southern portion of the Seabee Compound. The monitoring wells in this area are reported as Seabee Compound wells due to their location, although they are used to measure the progress of a section of the FFO DPVE system.

The plume in the FFO is characterized by its localized concentration of TPH-g contamination south of the office building where TPH-g concentrations up to 10,800 ug/I in EW-13D were reported on the second quarter 2003, and its more widespread TCE plume with concentrations ranging up to 353 ug/I in EW-2D, also in the second quarter of 2003

CLEANUP STRATEGY

Continue to operate system based on performance parameters obtained during the last months of operation. Based on system performance to date, additional in situ treatment may be required.

LAAFRC-008
UST-BASEWIDE PROGRAM
FLIGHTLINE PADS

SITE DESCRIPTION

The Flightline Pads are located south of the main flightline, between Taxiways 4 and 9 (Flightline Pad 1) and between Taxiways 9 and 3 (Flightline Pad 2). These pads are covered with marston matting and date back to the 1940s. The area is currently covered with native vegetation and is not used for aircraft parking. The Flightline pads were historically used to park vehicles and aircraft; however, that practice was stopped in the 1960s. There is a potential for a release of perchlorates at this site as a result of the use of jet-assisted takeoff rockets (JATO).

CLEANUP STRATEGY

Additional RI will be conducted using funding for LAAFRC-010.

STATUS

RRSE: High

CONTAMINANTS: POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199304
SI	199408	200012
RI	199912	200412
IRA	199603	200609
RA(C)	200408	200609
RA(O)	200408	200909

RC: 200909

LAAFRC-008
UST-BASEWIDE PROGRAM
MOTOR POOL

SITE DESCRIPTION

The Motor Pool is located north of the Flightline and east of the Former Fuel Farm (Building 233). Currently, fuel pods and bladders are stored on a grassy area on the east side of Building 72 (the former Motor Pool office). In the past, vehicle maintenance fluids were stored in the building and military vehicles were parked in the area. Vehicle maintenance was conducted in this area. Currently, helicopters are parked on the tarmac slightly south of Building 72. Most of the site is covered by asphalt. There is a potential for the release of California-designated "emergent chemicals," including TCP, at this site.

STATUS

RRSE: High

CONTAMINANTS: POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199304
SI	199408	200012
RI	199912	200412
IRA	199603	200609
RA(C)	200408	200609
RA(O)	200408	200609
LTM	200610	201010

RC: 200609

CLEANUP STRATEGY

Additional RI will be conducted using funding for LAAFRC-010. In situ treatment or monitored natural attenuation (5 wells) may be required in the event that TCP is discovered.

LAAFRC-008
UST-BASEWIDE PROGRAM
BUILDING 158

SITE DESCRIPTION

Building 158 (Emergency Pump House) is located in the eastern side of the JFTB. It housed the emergency generator for the water reservoir (Building 411) that is located directly west of Building 158. Records indicated that a 2,000-gallon capacity underground storage tank (UST) storing #2 diesel and gasoline was installed in the 1940s to supply fuel for the emergency generator. The UST was removed in 1987. Preliminary SI investigation activities conducted at that time by the tank removal contractors indicated that significant hydrocarbon impacted soil was present in soils adjacent to, and beneath the tank invert. Three groundwater-monitoring wells were installed during the SI.

STATUS

RRSE: High

CONTAMINANTS: TCE, PCE, Dichlorethylene (DCE), PCBs, POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199304
SI	199408	200012
RI	199912	200412
IRA	199603	200609
RA(C)	200408	200609
RA(O)	200408	200909

RC: 200909

In 1996, Clayton installed a free product removal system at Building 158 as part of an interim limited containment action. Once free product was no longer present at the area, the system continued to extract groundwater for treatment, using a simple pump-and-treat system. The system extracted groundwater at a daily flow rate that ranges between 5 and 10 gallons per minute. The system was shut down in preparation for installation of a DPVE system.

In January 2000, Tetra Tech Inc. (TTI) conducted a groundwater investigation at the site. During the investigation, nine groundwater-monitoring wells were installed at six locations around the area. Nested sets of dual completed wells were installed at two location and single completion wells were completed at five locations. The TTI investigation concluded that significant petroleum hydrocarbon impacted groundwater exists beneath the Building 158 area. The impact is more significant at a depth of approximately 15 to 30 feet below grade. The impact is more significant within the fine-grained soils (silts and clays). Although the impact reaches 130 feet below grade, the concentrations at those depths are generally low level.

CLEANUP STRATEGY

Currently, the next system that is expected to reach its clean up criteria is the CFR. Once the criteria is reached, or if the Army is allowed to limit the remediation efforts at the CFR to groundwater, the CFR DPVE system will be moved and will be used to provide the main equipment components at the Building 158 area.

A Workplan is approved for the installation of a new DPVE system and is proceeding.

LAAFRC-010
WASHRACK, CLARIFIERS, SUMPS, SEABEES

OPEN SUBSITES:

- **NOSE DOCK 61/CLARIFIER & HANGAR (BLDG 61)**
- **HANGAR 2 & PAINT SPRAY BOOTHS (BLDG 9/10/11)**
- **BLDG 35 CLARIFIER**
- **FLIGHTLINE PADS**

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES NOSEDOCK 61/CLARIFIER & HANGAR (BLDG 61)

SITE DESCRIPTION

The Nosedock 61 Hangar is currently used to park, maintain and operate twin-prop aircraft for use by the Orange County Vector Control Department. The Nosedock 61 Clarifier is located directly south of the marston-matting covered equipment storage lot, and is also directly west of the JP-4 refueling stands. Laboratory analysis of direct-push groundwater samples from the area of the Nosedock 61 Hangar detected metals, VOCs, and TPH-D. Laboratory analysis of soil samples from the site of the Medfly Hangar did not detect any of the compounds tested. Laboratory analysis of direct-push groundwater samples from the site of the Medfly Clarifier detected TPH-G and TPH-D. Laboratory analysis of soil samples from the site of the Medfly Clarifier detected VOCs and JP-4.

An RI and risk assessment is being implemented for the Hanger 61 (Medfly Hangar) and Clarifier. This site has passed Tier 1 and Tier 2 Risk Assessments for soil.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	200408	200503
IRA	199609	200604
RA(C)	200408	200609
RA(O)	200408	201209
LTM	200810	201209

RC: 201209

CLEANUP STRATEGY

The DPVE unit at Fuel Farm Office will address any groundwater contamination.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES HANGAR 2 & PAINT SPRAY BOOTH (BLDG 9/10/11)

SITE DESCRIPTION

Hangar 1 is located directly north of the center of the flightline and houses the aircraft control tower. Historically, Hangar 1 has been used for aircraft and helicopter maintenance and incorporated a removed 10,000-gallon waste oil tank. Solvents, lubrication oils, fuels, and other engine fluids were, and are currently, used in this area. This area also contains a wash-rack for cleaning aircraft.

Hangar 2 is located directly west of Hangar 1 and was built for aircraft maintenance, engine overhaul and body repair. Solvents, lubricants, fuels and other engine fluids were and are currently still used. The wash-rack north of Hangar 2 is used extensively for cleaning aircraft.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	200408	200503
IRA	199609	200604
RA(C)	200408	200609
RA(O)	200408	201309
LTM	201310	203009

RC: 201309

HANGAR 2/BUILDING 9 RA

A Feasibility Study is being conducted to evaluate the optimum Interim Removal Action approach, which will effectively address the contamination present in the Hangar 2 and Building 9 Area. The contaminants are primarily petroleum hydrocarbons and chlorinated solvents, which were in use in the area. Shallow releases have occurred in at least three areas and the resultant contaminant plumes have commingled into a linear plume approximately 500 feet long by 160 feet wide. These contaminants extend from the Building 9 and Hangar 2 area to Building 26. A separate area of concern adjacent to Building 34 is present 80 feet west of Building 26.

In December 2003, Clayton submitted a baseline health risk assessment.

The results of for the Hanger 2/Building 2 UST indicate that the upper bound incremental lifetime cancer risks (ILCRs) for the UST is one-in-one million (1E-06). This risk is within the USEPA *de minimis* risk range of 1 E-06 to 1 E-04 and is below the California Environmental Protection Agency (CalEPA) Proposition 65 *de minimis* risk of 1 E-05.

The results of the HRA also indicate that the upper bound hazard index (HIs) for the UST (0.18) do not exceed the acceptable HI ceiling of 1.

Based on the HRA:

- The upper bound incremental lifetime cancer risks (ILCRs) for the chemicals remaining in the soil near the UST is one-in-one million (1E-06)
- the upper bound hazard index (HIs) for the UST (0.18) does not exceed the acceptable HI ceiling of 1.0

Based on the remediation, confirmatory analytical results and the conclusions of the HRA, Clayton recommends that this UST site be closed.

- Contents – fuel oil
- Abandoned-in-place - October, 1987
- Remediation – October, 1993 – 110 cubic yards of soil removed
- Confirmatory sampling – October 1993 – ND for BTEX and TPH, lead at background
- Passed health risk assessment for fate and transport
- Recommend closure

CLEANUP STRATEGY

Based on available information, it appears that the remediation equipment in use at the JP-4 Tank Farm IRA will be substantially capable of achieving the remediation requirements in this area. Some modifications will be required to tailor the JP-4 equipment for the Hangar 2/Building 9 area, however, these modifications will require significantly lower capital that a new system. It appears that the JP-4 Tank Farm equipment could be available in 18 months once remediation effectiveness has been demonstrated at the JP-4 Tank Farm IRA area.

Based on the Feasibility Study results to date, the Dual Phase Vacuum Extraction (DPVE) approach is likely to be the most effective in this area. Assuming that the site characteristics are similar to other IRA areas at JFTB, approximately 17 dual nested wells will be sufficient to extract and treat the contaminants in the area. These wells are anticipated to extend to a depth of 40 feet to capture the majority of contaminants. The deeper zone will require a two-pump system similar to other IRA sites at the JFTB. These wells will be installed below ground to minimize the disruption in the area since significant JFTB activity is present.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES BUILDING 35 CLARIFIER

SITE DESCRIPTION

Building 35 is located near the center of the JFTB Los Alamitos. It has been used as the engineering maintenance facility since the 1940s. It includes storage yards, warehousing, metal fabricating, wood fabricating, plumbing and electrical shops, painting facilities, a washrack, and an industrial wastewater clarifier. Materials handled at this site include solvents, fuels and waste chemicals generated during maintenance activities. No records exist of spills or disposal activities. Previous investigations indicate the presence of volatile organic compounds (VOCs) in the soil, and VOCs and semi volatile organic compounds (SVOCs) in the soil.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, SVOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	200408	200503
IRA	199609	200604
RA(C)	200408	200609
RA(O)	200408	200709
LTM	200710	201209

RC: 200709

Based on past use of the Building 35 Area as a maintenance facility with a washrack and clarifier, the SI was designed to detect fuels and solvents that may have been spilled or disposed at this site. In the SI, five soil boring locations were sampled form the 1, 5, and 10-foot bgs depths and were analyzed for VOCs and TPH-D&G. Results indicated that VOCs and TPH-D&G were present. Evaluation of this SI data resulted in recommendation for an RI/FS in this area.

As recommended in the SI Report, an RI Phase I was conducted to verify the SI results and delineate the lateral and vertical extent of the soil hot spot. In the RI Phase I, five soil boring locations were sampled at 5 and 10 feet bgs and were analyzed for VOCs, SVOCs, CAM metals, hexavalent chromium, and organic lead.

Preliminary review of the RI Phase I soil and groundwater data confirmed the presence of elevated VOCs in this area. VOCs reported above the groundwater PRG are TCE, PCE, 1,2-DCE, 1,1-DCE, and vinyl chloride. Requested funding was received to perform an IRA in this area. The Interim Removal Action is designed to protect human health and the environment by controlling migration of, and significantly reducing concentrations of soil and groundwater contamination.

Dual Phase Vacuum Extraction (DPVE) was selected as the treatment technology to remove VOCs from the soil and groundwater at this area. DPVE is an in situ process that combines conventional soil vapor extraction with enhanced groundwater extraction. DPVE is effective at remediating both soil and groundwater contamination because it simultaneously extracts both soil vapor and groundwater from the subsurface under a high vacuum. The extraction portion of the process partially treats the groundwater, stripping VOCs into the vapor stream. The extracted vapor and

groundwater are then separated and treated respectively with vapor phase and aqueous phase carbon canisters.

In the third quarter of 2002, the system was retrofitted and upgraded by installing three additional extraction wells in the western section of the plume. Since then, the western portion of the plume exhibited concentrations of TCE higher than those characteristic of the plume.

Twelve hydropunch samples were completed to investigate this area in December 2003 and it successfully delineated the southern boundary of the plume. However, it did not delineate the plume to the northwest or west of Building 35, even after a second round of sampling.

Three monitoring wells, N17-12, O17-4, and O17-5, were installed after the hydropunch was completed, and sampled for the first time in January 2004. Their concentrations delineate the plume extent to the south but not to the west and northwest.

Based on the remaining undelineated western and northwestern portion of the plume, additional hydropunch samples followed by monitoring well installation was recommended and proposed. After the investigation has delineated the plume extent, new wells in areas of high concentrations such as well N17-12 should be converted to extraction wells. A second hydropunch event in undefined areas was completed

CLEANUP STRATEGY

Install additional extraction wells and continue operations with expected closure in September 2007.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES FLIGHTLINE PADS

SITE DESCRIPTION

The Flightline Pads are located south of the main flightline, between Taxiways 4 and 9 (Flightline Pad 1) and between Taxiways 9 and 3 (Flightline Pad 2). These pads are covered with Marston matting and date back to the 1940s. The area is currently covered with native vegetation and is not used for aircraft parking. The Flightline Pads were historically used to park vehicles and aircraft; however, that practice was stopped in the 1960s. Since use of the area ceased, vegetation has been controlled using pesticides and herbicides, especially along the taxiway edges.
In the SI, five soil-boring locations were sampled. Only gasoline was reported as non-detect. Evaluation of this SI data resulted in a recommendation for an RI/FS for this area.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	200408	200503
IRA	199609	200604
RA(C)	200408	200609
RA(O)	200408	201209

RC: 201209

Based on these SI results and on past use of this area for vehicle and aircraft parking (and possibly maintenance), the RI Phase I was designed to detect fuel and solvents that may have leaked, spilled, or been disposed at this site. To this end, eight soil boring locations to 1 and 5 feet bgs were collected and analyzed for VOCs, SVOCs, pesticides/PCBs, CAM metals, and hexavalent chromium.

At the Flightline Pads during the SI, five locations were sampled and analyzed for TPH-D&G and TRPH. All SI results were reported below the soil standards.

During the RI Phase I, eight locations were completed to 1 and 5 foot bgs depths and analyzed for VOCs, SVOCs, pesticides/PCBs, CAM metals, and hexavalent chromium. Of these samples, only arsenic was reported above the 0.38 ppm soil standard, with a maximum concentration of 25.8 ppm

The levels of arsenic found in JFTB Los Alamitos soil is not considered significant. Based on the above evaluation, these results indicate that soil contaminants are not present at significant levels in this area. Therefore, this area possesses no present or future risk and remediation is not required.

CLEANUP STRATEGY

A recommendation letter will be written to the RWQCB requesting closure of this AOC.

JFTB LOS ALAMITOS

INSTALLATION RESTORATION PROGRAM
RESPONSE COMPLETE
SITE DESCRIPTIONS

LAAFRC-002
LANDFILL/SEWAGE TRMT/JET ENG TEST FORMER SEWAGE TREATMENT SYSTEM & SLUDGE LAGOON

SITE DESCRIPTION

A wastewater treatment system was located on the southwestern portion of the JFTB Los Alamitos between the North and South landfills. According to aerial photographs reviewed, the wastewater treatment plant was present in 1947. The treatment system was comprised of three circular aboveground storage tanks and a four stage open clarifier structure. All of the tanks appeared to be constructed of concrete. As observed in aerial photographs, a sludge lagoon, located southwest of the treatment plant, was not present until 1952. The sludge lagoon was filled in during the 1960s. The treatment system was either removed or filled when the base was connected to the local Public-owned Treatment Works (POTW).

STATUS

RRSE: High

CONTAMINANTS: POL, VOCs, Metals, Pesticides, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End

This is a sub-site and does not have separate phases listed in AEDB-R

An unknown volume of liquid waste was potentially disposed of at the Former Wastewater Treatment System. The system operated from 1943 to 1967 and may have received waste through the facility sewer system. The sampling activities were designed to detect liquid waste constituents that may have been disposed through the sewer system. The analyses included VOCs, SVOCs, pesticides, PCBs, metals, TPH-G, TPH-D, and TRPH.

Groundwater contamination detected in the area of the former wastewater treatment system included: PCE at 16 ug/L, TCE at 32 ug/L, PCB at 1.2 ug/L, barium at 1,300 ug/L, chromium at 220 ugfl, lead at 120 ugfl and 2,4 dichlorobenzoic acid at 600 ug/L. The soil samples included: TCE at 24 ug/kg, TPH-D at 1,300 mg/kg, 4,4-DDT at 13 ug/kg.

This area of concern is under the landfill-wide EE/CA investigation as well as the RI/FS

LAAFRC-003
OLD CFR TRAINING PITS

SITE DESCRIPTION

The Old CFR Training Pits are located south of Building 272 and Saratoga Avenue. They consist of two 60 foot diameter circular pits surrounded by one-foot high berms. Training exercises were conducted at these pits; one was used from 1977 through 1979, while the other was used from an unknown start date through 1983. These exercises were completed in the same manner as at the new CFR Training Pits. As a result, similar contaminants were expected.
At the Old CFR Training Pits during the SI, three soil borings were sampled at depths of 1, 5, and 10 feet bgs and were analyzed for VOCs, SVOCs, pesticides/PCBs, dioxins/furans, TPH-D&G, and TRPH. Of these samples, only diesel was reported above the soil standard of 100 ppm, with a maximum concentration of 290 ppm. RI Phase I sampling was not conducted in this area.

STATUS

RRSE: High

CONTAMINANTS: Dioxins, PAHs

MEDIA OF CONCERN:
Soil

PHASES	Start	End
This is a sub-site and does not have separate phases listed in AEDB-R		

The levels of diesel reported in JFTB Los Alamitos soil are not considered significant and no other parameters were reported above the conservative soil standards. Although SI results indicate that soil contaminants are not present at significant levels in this area, PAHs and dioxin may be present in the soil in this area due to the burning activities conducted in the CFR Pits. Both PAHs and dioxins may present a health risk to workers in the area.

The dioxins hexa-chlorinated dibenzyl dioxin (HxCDD), octa-chlorinated dibenzyl dioxin (OCDD), and heptachlorinated dibenzyl dioxin (HpCDD) were detected at two of the three Sllocations. HxCDD was reported below the soil standard, while HpCDD and OCDD do not have published standards available. PAHs were not detected in the SI samples. To ensure that PAHs and dioxins are not present at significant levels in the soil in this area, additional soil samples have been collected during the OU-2 Phase II investigation. Including collecting soil samples from 10 soil boring locations, with samples collected from the 0 to 6 inch, 1 foot, and 3 foot bgs depths. All 0 to 6-inch samples were be analyzed for PAHs using the SVOC method (EPA Method 8270). All 1 and 3 foot samples are being analyzed for the dioxins HxCDD and TCDD. The data from this sampling effort is under review and will provided in the final OU-2 RI report

LAAFRC-008
UST-BASEWIDE PROGRAM HANGAR 1

SITE DESCRIPTION

Hangar 1, located east of Hangar 2, has historically been used for aircraft and helicopter maintenance. There was a 10,000 gallon waste oil tank that has been removed. All types of engine, equipment and aircraft maintenance were, and are currently, conducted at Hangar 1. Solvents, lubrication oils, fuels and other engine fluids were, and are currently, used in this area. This area contains a washrack, which is used to clean aircraft.

Based on past and present use of this area for aircraft maintenance and cleaning, the SI was designed to detect fuel and solvents that may have leaked, spilled, or been disposed of at this site. In the SI, one soil boring location was sampled to a depth of 10 feet bgs. This sample was analyzed for VOCs and TPH-D&G, which were all detected. Evaluation of this SI data resulted in a recommendation for an RifFS for this area.

STATUS

RRSE: High

CONTAMINANTS: POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
This is a sub-site and does not have separate phases listed in AEDB-R		

An RI Phase I was conducted to complete the characterization at this AOC. In the RI Phase I, five soil boring locations to 10 feet bgs were analyzed for VOCs, CAM metals, hexavalent chromium, and TPH-D&G.

Laboratory analysis of direct-push groundwater samples from the area of Hangar 1 detected 2-butanone, TPHD, and TRPH. Screening values were not exceeded for these compounds in groundwater. Laboratory analysis of soil samples from the site of Hangar 1 detected acetone, TPH-D, and TPH-G, including: Benzene at 14 ug/L, TCE at 21 ug/L, PCE at 34 ug/L, Vinyl chloride at 1 ugfL, TPH-D at 9,400 mg/L

LAAFRC-008
UST-BASEWIDE PROGRAM
BUILDING 34

SITE DESCRIPTION

Building 34 (Fire Station Building) is located south of enterprise Avenue across from the Base Exchange. Historically contained five USTs. Three were used for storage of diesel fuel, gasoline, one stored waste oil and one stored fuel oil. These USTs were removed and 12,000 cubic yards of soil was excavated and disposed of. Building 34 contains a total of 12 wells, all in the shallow aquifer. Laboratory analysis of ground water samples collected form the eleven existing monitoring wells detected VOCs, TPH-G, and TPH-D, including benzene at 180 ug/L, 1, 2 DCA at 27 ug/L.

STATUS

RRSE: High

CONTAMINANTS: POL

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	**Start**	**End**

This is a sub-site and does not have separate phases listed in AEDB-R

Interim Removal Action is not currently scheduled for this area. Contaminants occurring in groundwater at this site are being remediated by the IRA located adjacent behind Building 35.

In December 2003, Clayton submitted a baseline HRA.

The results for Building 34 USTs, indicate that the upper bound incremental lifetime cancer risks (ILCRs) for the UST is two-in-one million (2E-06). This risk is within the USEPA *de minimis* risk range of 1 E-06 to 1 E-04 and is below the CalEPA Proposition 65 *de minimis* risk of 1 E-05.

The results of the HRA also indicate that the upper bound HI for the USTs (0.09) does not exceed the acceptable HI ceiling of 1.

Based on the HRA:

- The upper bound incremental lifetime cancer risks (ILCRs) for the chemicals remaining in the soil near the UST is two-in-one million (2E-06)
- the upper bound hazard index (HIs) for the UST (0.09) do not exceed the acceptable HI ceiling of 1.0

Based on the remediation, confirmatory analytical results and the conclusions of the HRA, Clayton recommends that Building 34 USTs 5, 6, 7, 13, and 30 be closed. The basis for the recommendation for each UST associated with Building 34 is listed below.

<u>UST 5</u>

- Contents – waste oil
- Removed - October, 1987
- Confirmatory sampling – October 1993 – ND for BTEX; TPH at 7.0 mg/Kg under UST location

- Passed health risk assessment for fate and transport
- Recommend closure

USTs 6 and 7

- Contents – gasoline
- Removed - October, 1987
- Remediation – October, 1993 – 225 cubic yards of soil removed
- Confirmatory sampling – October 1993 – ND for BTEX; maximum TPH-D at 60 mg/Kg at east end of excavation; lead at background
- MTBE groundwater analyses – ND for years 2001, 2002 and 2003 in wells MW-N19-1, N19-2 and N19-3 (except for one unexplained anomaly in 2001). Concentrations less than MCLs in MW-N19-4
- Passed health risk assessment for fate and transport
- Recommend closure

UST 13

- Contents – diesel
- Removed – removal date unknown
- Confirmatory sampling – Unknown
- MTBE groundwater analyses – ND for years 2001, 2002 and 2003 in wells MW-N19-1, N19-2 and N19-3 (except for one unexplained anomaly in 2001). Concentrations less than MCLs in MW-N19-4
- Passed health risk assessment for fate and transport
- Recommend closure

UST 30

- Contents – fuel oil
- Removed - October, 1987
- Remediation – October, 1993 – 180 cubic yards of soil removed
- Confirmatory sampling – October 1987 – ND for BTEX; TPH at 40 mg/Kg from underneath UST
- Passed health risk assessment for fate and transport
- Recommend closure

Clayton recommends that no further action is warranted at Building 34 site of USTs 5, 6, 7, 13 and 30. Based on the remediation, confirmatory analytical results and the conclusions of the HRA, Clayton recommends that this UST site be closed.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES ECS-16 (BLDG 272)

SITE DESCRIPTION

The Equipment Concentration Site (ECS-16) site has been used as the primary maintenance and equipment concentration site for the Army Reserve at JFTB Los Alamitos. All types of vehicles and equipment are maintained and stored at this site. The ECS-16 site includes Building 272, is located northeast of JP-4 Tank Farm and is used for vehicle maintenance and storage. In this area, there are four 550 gallon waste oil tanks, a wash rack and drain (and likely a removed or abandoned clarifier), and a battery storage structure. Batteries are currently stored in a small shack behind the drain to the south. The three drum storage sheds, about 60 feet north of Building 272, are shed for the storage of lubricants.

STATUS

RRSE: High

CONTAMINANTS: VOCs, POL, PCBs, Metals

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	**Start**	**End**

This is a sub-site and does not have separate phases listed in AEDB-R

Laboratory analysis of direct-push groundwater samples from the site of the ECS-16 detected VOCs, TPH-G, and TPH-D. laboratory analysis of soil samples collected from the site detected TPH-G, including: PCE at 6 ug/L, TRHP at 2,130 mg/L.

At the ECS-16 during the SI, two samples were collected from a depth of 5 feet bgs and were analyzed for VOCs and TPH-D&G. All SI samples reported all parameters below the soil standards.

During the RI, 10 samples were collected from depths of 5 and 10 feet bgs and were analyzed for VOCs, SVOCs, CAM metals, hexavalent chromium, TPH-D&G, and organic lead. Of these samples, only diesel and arsenic were reported above the respective soil standards of 100 and 0.38 ppm, with maximum concentrations of 2130 and 11.7 ppm.

The levels of diesel and arsenic found in the soil are not considered significant. Based on the above evaluation, these results indicate that soil contaminants are not present at significant levels in this area. Therefore, this area possesses no present or future risk and remediation is not required for soil contamination. This AOC will be included in the base wide Risk Assessment should now be removed from further study.

A RI report for soil and groundwater and risk assessment is currently being prepared under OU-1 and OU-2 with data available in the spring of 2002 and reports to follow.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES VEHICLE DEPOT CLARIFIER (EAST OF BLDG 272)

SITE DESCRIPTION

The site is located near the southern perimeter of the engineering yard in the Main Garrison. The site was occupied by a small wooden framed building prior to the construction of present day buildings. Past pesticide storage may have included malathion, DDT and lindane. In 1941, two 500-gallon waste oil USTs were associated with the site. In 1991, the USTs were closed. No visible staining of the ground surface was observed. Site personnel revealed that the building was a carpenter shop and that there had been vehicle maintenance and pesticide storage and mixing at the facility.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End

This is a sub-site and does not have separate phases listed in AEDB-R

Building 6417 has been identified for demolition under the Building Demolition Program. The USACE has reported that the pesticide buildings and buildings 6545 A and B have been investigated previously. Therefore, no sampling will be performed at this site. Pesticides and herbicides are stored in Buildings 6457A and 6457B, which are self-contained, state-of-the-art storage lockers. The mixing area is a washing pad located behind Building 6417. The pesticide storage units and mixing area are located in the Engineering Yard. In the past, malathion and other pesticides used by Fort Ord personnel were stored in Building 6456. Building 6457 was used to store excess pesticides, including DDT and lindane. There were no signs of contamination in the vicinity of the pesticide storage and mixing areas observed during the site visit.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES 40TH MILITARY POLICE

SITE DESCRIPTION

The sampling plan for this site included analyses to detect constituents of the contaminants that have been potentially released at the site, including soil analysis for VOCs, TRPH, TPH-D, pesticides, PCBs, metals, and TPH-G.

Laboratory analysis of soil samples from the site of the 40th Military Police did not detect any compounds above the laboratory limits of detection; therefore, screening values were not exceeded.

After the limited RI and risk assessment are completed no further action is recommended for the 40th Military Police. The RI sampling resulted in non-detect for all VOCs and metals.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End

This is a sub-site and does not have separate phases listed in AEDB-R

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES GYMNASIUM CLARIFIER (BLDG 44)

SITE DESCRIPTION

The gymnasium buildings (Building 44-weight rooms/showers and Building 57-basketball court, etc.) are located on the north side of JFTB Los Alamitos near the main gate. On the east side of Buildings 44 and 57, there is a vehicle wash area and a three-stage clarifier.

Based on past and current use of this area for military police and emergency vehicle washing, the SI was designed to detect fuel and solvents that may have leaked, spilled, or been disposed at this site. In the SI, two soil boring locations were sampled at the 1 and 5 foot bgs depths and were analyzed for VOCs and TPH-D&G. VOCs and diesel were detected. Evaluation of this SI data resulted in a recommendation for a RI/FS for this area.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
This is a sub-site and does not have separate phases listed in AEDB-R		

As recommended in the SI Report, an RI Phase I was conducted to verify the SI results and to delineate the lateral and vertical extent of the contamination. In the RI Phase I, two soil boring locations to 1.5 feet bgs were placed in this area. All samples were analyzed for VOCs and TPH-D&G.

At the Gymnasium clarifier, two locations were sampled from 1.5 feet bgs and were analyzed for VOCs and TPH-D&G during the SI. Of these samples, all parameters were reported below the soil standards.

Without exception, these results indicate that soil contaminants are not present at significant levels in this area. Therefore, this area possesses no present or future risk and remediation is not required..

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES
OMS-8 CLARIFER (BLDG 279)

SITE DESCRIPTION

The OMS-8 Clarifier site has historically been used to repair, park and maintain small to medium-sized military vehicles. There is a clarifier on the northwest side of the OMS-8 that accepted washwater from cleaning vehicles and vehicle parts.

During the RI, five samples were collected from the 5 and 10-foot bgs depths and were analyzed for VOCs, CAM metals, hexavalent chromium, TPH-D&G, and organic lead. Of these samples, only arsenic was reported above the soil standard of 0.38 ppm, with a maximum concentration of 6.5 ppm.

STATUS

RRSE: High

CONTAMINANTS: Metals, POL, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End

This is a sub-site and does not have separate phases listed in AEDB-R

The levels of diesel and arsenic found in the soil are not considered significant. Based on the above evaluation, these results indicate that soil contaminants are not present at significant levels in this area. Therefore, this area possesses no present ,nor future risk and remediation is not required. This AOC should now be removed from OU-2 and from further study. A decision document will be written to the Regional Water Quality Control Board (RQWCB) requesting closure of this AOC and official removal from OU-2.

LAAFRC-010
WASHRACK CLARIFIERS, SUMPS, SEABEES
SEABEE COMPOUND (BLDG 202

SITE DESCRIPTION

The Seabee Compound, a fenced area located at the northwest corner of the intersection of Enterprise Avenue and Essex Road, was used by a U.S. Naval Reserve Construction Battalion Unit until 1994. The six buildings in this area were used for vehicle and heavy equipment maintenance, hazardous material storage, battery maintenance and storage, and administrative uses.

STATUS

RRSE: High

CONTAMINANTS: POL, Metals, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End
This is a sub-site and does not have separate phases listed in AEDB-R		

Within the compound, several historical activities could have resulted in environmental concerns. Records indicate that solvents were used extensively. A 7,500 gallon UST was used for the storage of waste solvents 50 feet west of the compound, and a three-stage clarifier was used to collect wash water used for cleaning parts and vehicles adjacent to Building 202.

Based on past activities where solvents and fuels were used and stored, the SI was designed to detect fuel and solvents that may have been spilled or disposed of at this site. In the SI, five soil boring locations were sampled from the 10-foot bgs depth and were analyzed for VOCs and TPH-D&G. Results indicated that some parameters from each of these methods were present. Evaluation of these SI data resulted in a recommendation for a RifFS for this area.

As recommended in the SI Report, an RI Phase I was conducted to verify the SI results and to delineate the lateral and vertical extent of the soil hot spot. In the RI Phase I, one soil boring location to 5 and 10 feet bgs was sampled and analyzed for VOCs and TPH-D&G.

Preliminary review of the RI Phase I data confirmed the presence of elevated VOCs in the shallow groundwater in this area. Requested funding was received to perform an IRA in this area. An IRA is an Interim Removal Action designed to protect human health and the environment by controlling migration of, and significantly reducing concentrations of soil and groundwater contamination.

Dual Phase Vacuum Extraction (DPVE) was selected as the treatment technology to remove VOCs from the soil and groundwater in this area. Preparations to implement this DPVE IRA are in progress, start-up began in July of 1998, and normal interim remedial action was completed at the area in September 2000.

Since the inception of the program at this location, quarterly groundwater monitoring was conducted on monitoring wells located in the area. Historical plume maps were developed to document the nature of the plume during this period. Data collected had indicated a downward trend in the VOC concentrations in the subsurface. During the operational life of the system, a runtime of

over 90 percent was recorded. Approximately 180 pounds of VOCs were extracted from the subsurface. Over 99 percent of the VOCs were from soil vapor. Over 2 million gallons of groundwater was extracted, treated and discharged to a nearby storm drain.

An RI/FS is being implemented at this site of concern. During the RI, one location was sampled at 5 and 10 feet bgs and was analyzed for VOCs and TPH-D&G. Of these samples, no analytes were detected above the soil standards.

The levels of diesel and gasoline found in the soil are not considered significant. Based on the above evaluation, these results indicate that soil contaminants are not present at significant levels in this area.

Phase II sampling at this area consisted of one soil boring location and one sediment sample from inside the clarifier. The soil boring was collected from the 0 to 6 inch depth. All samples will be analyzed for PAHs using the SVOC method (EPA Method 8270).

LAAFRC-010
PESTICIDE STORAGE AREA
MUNITIONS BUNKERS

SITE DESCRIPTION

The Munitions Bunkers are located in the southeast portion of the JFTB Los Alamitos near the agricultural maintenance yard. These are secured structures with rounded roofs and soil/vegetation across the tops and sides. They were constructed during World War II and were used until the 1970s to camouflage munitions. At various times in the past, the Bunkers were used for the storage of pesticides, chemicals, and miscellaneous office equipment. With one exception, the Bunkers are empty - small arms ammunition is currently being stored in one Bunker.

STATUS

RRSE: High

CONTAMINANTS: POL. Metals, VOCs, PCBs

MEDIA OF CONCERN:
Soil, Groundwater

PHASES	Start	End

This is a sub-site and does not have separate phases listed in AEDB-R

Based on past use of this area for storage of chemicals, the SI was designed to detect potential chemicals that may have leaked or been spilled at this site. In the SI, five soil boring samples were collected from the 1 and 2-foot bgs depths and were analyzed for VOCs, CAM metals, and TRPH. Some parameters from each of these methods were detected. Evaluation of this SI data resulted in a recommendation for a RI/FS for this area. As recommended in the SI Report, an RI Phase I was conducted to verify the SI results and to delineate the lateral and vertical extent of the soil hot spot.

At the Munitions Bunkers, five samples were collected from depths of 1 and 5 feet bgs and were analyzed for VOCs, CAM metals, and TRPH during the SI. All SI parameters were reported below the soil standards.

During the RI Phase I, six samples were collected from the 1 and 5 foot bgs and were analyzed for VOCs, SVOCs, pesticides/PCBs, CAM metals, and hexavalent chromium. Of these samples, only arsenic was reported above the 0.38 ppm soil standard, with a maximum concentration of 8.2 ppm.

LAAFRC-011
PESTICIDE STORAGE AREA
FORMER PESTICIDE USE AND STORAGE AREA

SITE DESCRIPTION

The areas of concern for pesticide use are:

- Agricultural fields on the south side of the JFTB Los Alamitos
- Golf course on the southeast side of the JFTB Los Alamitos
- Areas along the runways and taxiways
Logistical support site
Pesticide storage areas (Buildings 35, 89, and 48)
- Northern drainage ditch

STATUS

RRSE: Medium

CONTAMINANTS: Pesticides, PCBs

MEDIA OF CONCERN:
Soil

PHASES	Start	End
PA	199304	199308
SI	199408	199602
RI	199605	200010

RC: 200012

The largest area is the current agricultural area on the south side of the installation, which includes approximately 92 acres. These fields are currently being used for strawberry farming. Pesticides are used here to control the insects, which are harmful to the strawberry plants. The logistical support site has also recently been planted with strawberry plants. The golf course uses both pesticides and chlori nated herbicides to control the pests and weeds on the greens and fairways of the course. Another large area where herbicides have been used extensively is along the edges and within the interiors of the runways and taxiways to control the weeds. Building 35, which is located on Enterprise Avenue, has a metal shed about 200 feet to the south of the building where pesticides, herbicides, and possibly other chemicals were stored. Building 89 is the maintenance and storage area for the golf course. Tractors and other maintenance vehicles are stored and repaired in this area. Fertilizers and a small quantity of herbicides are stored here and these chemicals are mixed with water in tanks located on the vehicles that dispense them. There is an adjacent berm ed-concrete pad with a drain where these vehicles are filled with herbicides/fertilizers and then mixed with water. The drain empties into the drainage ditch west of Building 89.

Based on past and present treatment of these areas with pesticides and chlorinated herbicides to control pests and weeds, the SI was designed to detect pesticides and herbicides that may be present in the soil. In the SI, 15 soil samples were collected from the 1 to 3 foot bgs depths. Samples were analyzed for pesticides, PCBs, and chlorinated herbicides. Some pesticide and PCB parameters were detected, all at levels below the soil standards. Evaluation of this SI data resulted in a recommendation for an RI/FS for this area.

As recommended in the SI Report, an RI Phase I was conducted to identify any pesticides an herbicides which may have been overlooked in this large amount of acreage. In the RI Phase I, 25 composite soil samples from the 1 to 3 foot bgs depth were analyzed for 8140 and 8150 parameters.

At the Pesticide Use Areas, 15 surface soil samples were collected at the 1 to 3 foot bgs depths and were analyzed for pesticides, PCBs, and chlorinated herbicides during the SI. All of these samples

were reported below the soil standards.

During the RI, 25 surface soil samples were composite from the 1 to 3 foot bgs depths and were analyzed for organophosphorous compounds and chlorinated herbicides. All of these samples were reported below the soil standards.

Based on the above evaluation, these results indicate that soil contaminants are not present at significant levels in this area. Therefore, this area possesses no present or future risk and remediation is not required.

PAST MILESTONES

Interim Remediation, Initiation	Apr 92
JP-4 Removal	Jul 92
PA Initiation	Feb 93
PA Installation	Aug 93
PA Community Meeting	Mar 94
SI Initiation	Jul 94
RAB Established	Oct 95
Interim Remediation, Continuation	Oct 95
Final Draft SI Completed	Oct 95
Remedial Investigation, Initiation	Apr 96
Draft RI Workplan Submitted	May 96
JP-4 Free product removal Completed	Jul 96
Interim Soil/Groundwater Treatment System Design	Jul 96
Final RI Workplan	Jul 96
Draft Human Health Risk Assessment Workplan	Dec 96
Interim Soil/Groundwater	Dec 96
Time Critical Removal Action and Interim Removal Action Workplan	Jan 97
Risk Assessment Workplan	Apr 97
Update Site-wide Health and Safety	May 97
Draft Workplan for IRA at JP-4	May 97
Underground Storage Tank Closure Report	Jul 97
Draft Final Workplan JP-4 Tank Farm IRA	Oct 97
Draft RI Report OU-1	Oct 97
Final IRA Workplan Seabee Compound	Feb 98
Final IRA Workplan CFR	Feb 98
Final IRA Workplan North Landfill	Feb 98
Final RI Report OU-2 Phase I	Dec 98
Draft RI Workplan OU-2 Phase II	Dec 98
Engineering Evaluation/Cost Analysis Workplan	July 99
Completed bioremediation for soil from JP-4	Sept 99
Operations and Maintenance Plan for DPVE units	Nov 99
Draft RI Workplan OU-1, Phase II	Feb 00
Final RI Report OU-1, Phase I	Mar 00
Draft RI Workplan OU-3, Phase II	Mar 00
Final RI Report OU-3 Phase I	May 01
Final EE/CA Landfill	Oct 03
Draft RI Risk Assessment	Dec 03
Draft RI/FS Report	Dec 04

PROJECTED MILESTONES

Phase Completion Milestones:
The milestones will be established when the PBC is awarded and the Management Action Plan is approved.

ROD/DD Approval Dates:

Completion Date of all RA(C) Activities: FY2009

Completion Date of IRP (including LTM phase): FY2034

PRIOR YEAR FUNDING

FY99 1,594.6K

FY00 1,697K

FY01 1,970K

FY02 2,916K

FY03 2,820K

FY04 2,576K

TOTAL: $13,573,600.00

CURRENT YEAR FUNDING

FY05 **2,257K**

FUTURE YEAR FUNDING

TOTAL FUTURE REQUIREMENTS: $14,782,000

TOTAL IRP PROGRAM COSTS: $30,612,600

Community Involvement

In FY95, the Restoration Advisory Board was established and continues to meet on a quarterly schedule.

JFTB LOS ALAMITOS

MILITARY MUNITIONS RESPONSE PROGRAM

MMRP Summary

STATUS: Non-NPL

AEDB-R SITES/SITES RC: 1/0

AEDB-R SITE TYPES:
1 Small Arms Range

CONTAMINANTS OF CONCERN: Lead

MEDIA OF CONCERN: Soil

COMPLETED REM/IRA/RA: None

IDENTIFIED POSSIBLE REM/IRA/RA: Excavation at LATB-001-R-01

TOTAL MMRP FUNDING:

PRIOR YEAR:	$0
CURRENT:	$0
FUTURE:	$1,228K

DURATION OF MMRPP:

Year of MMRP Inception:	2002
Year of RA Completion:	2017
Year of MMRP Completion:	2017

Army and DoD experience indicates that contamination on small arms ranges is primarily lead in soils and that remediation of these sites would primarily consist of excavation, off-site transportation, stabilization, and recycling. No MEC components would be expected at small arms ranges; therefore, they are not included in the estimate. Although the types of small arms ranges and patterns of contamination can vary, assumptions for this CTC estimate were based on the characteristics of a typical pistol and/or rifle MMRP range.

Typical dimensions and layout of an outdoor pistol and rifle range were obtained from MIL-HDBK-1027/3B (*Range Facilities and Miscellaneous Training Facilities other than Buildings*, June 1995), which provide recommended dimensions for range width, length, and impact berm design. The default suite of phases used for estimating costs for these sites includes:

MEC Phases

- Historical Records Review

MC Phases

- SI
- RI/FS
- RD
- Remediation of soil

Historical Records Review (HRR)

HRRs are not typically performed separately for each site at an installation -- one HRR is typically performed per installation. Therefore, the cost for only one HRR cost was therefore estimated per installation.

Site Inspection (SI)

All of the available RACER elements of an SI were selected as defaults. The site-specific assumptions that were required included the identification of the media to be sampled and the number of samples. The primary purpose of the SI is to confirm the presence or absence of munitions constituents. Numbers of soil samples included are shown below:

Site Inspection Surface Soil Samples

Range Size (acres)/Media	0 - 5	6-20	21-50	51-100	101-200	>200
No. of Locations	10	15	20	30	45	60
No. of Samples/Location	1	1	1	1	1	1
No. Rounds	1	1	1	1	1	1

As with the HRR, the Army typically funds and performs SIs for the installation as a whole. For installations with several or very large sites, it was determined that estimating an SI cost for each site produced a cost in excess of the Army's experience in performing these studies. For this reason, for many installations, an SI cost was not estimated for all sites, but for a sufficient number of sites to reflect the expected cost of a facility-wide SI. At water sites, sediment was sampled instead of soil.

Remedial Investigation (RI)

All of the available RACER components of an RI were selected. The determination of the extent of contamination in all media is required in order to perform the risk assessment and evaluate remediation alternatives should they be required. It was assumed, therefore, that sampling would be performed in surface and subsurface soils. The table presents the media sampling assumptions.

Remedial Investigation Media Samples

Range Size (acres)/Media	21-50
Surface Soil	
No. of Locations	40
No. of Samples/Location	1
No. Rounds	1
Subsurface Soil	
Ave. Depth (ft.)	2
No. of Locations	40
No. of Samples/Location	3
No. Rounds	1

Remedial Action (RA)

- The RA selected for small arms ranges was the excavation of lead-contaminated soil and transportation and disposal at an off-site facility with stabilization. This requires the use of two RACER technology models, one for excavation and a second for off-site transportation and disposal. The primary cost driver and most significant unknown for estimates with these technologies are the dimensions of the excavation and the associated volume of lead-contaminated soil. Soil excavation volumes were based on site size. The assumption used is as follows: Ranges 21 – 50 Acres: 999 yd^3 of contaminated soil.

CLEANUP EXIT STRATEGY: Focus of the SI will be to gather data for risk modeling to determine remedial requirement.

LOS ALAMITOS

MILITARY MUNITIONS RESPONSE PROGRAM

SITE DESCRIPTION

LATB-001-R-01
PHELAN SMALL ARMS RANGE

SITE DESCRIPTION

This transferred range is located approximately 32 miles northwest of the City of San Bernardino in the northern portion of a privately owned ranch located near Phelan, California, just east of Highway 138. The range is comprised of 3 acres and consisted of targets placed on a small retaining wall positioned at the base of a mountain, bleachers, and a tower. Only small arms were used at this range by Army personnel. According to Mr. Wayne Alves of the 63d RSC, the range was used twice in the early 1990s, pursuant to a five-year lease signed on August 15, 1992, between the Department of the Army and Mr. Gerald Davis, the private landowner. After a renewal of the lease in 1997, the lease was terminated in January 2002. There have been no known response actions at this range. The land was never owned by the Department of Defense. The site is currently used as a firing range by the Boy Scouts and the local Police Department. The site does not qualify as FUDS property because it was used after 1986.

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STATUS

RAC Score: 5

CONTAMINANTS: Lead

MEDIA OF CONCERN:
Soil

PHASES	Start	End
PA	200205	200308
RI	200701	201509
RD	201510	201609
RA(C)	201610	201709

RC: 201709

CLEANUP STRATEGY

This site is thought to belong to the 63d RSC, a tenant on JFTB Los Alamitos. Future actions are likely to be addressed by the 63d RSC.

PAST MILESTONES

MMRP Start Date/Non-Operational Range Report: 2003

PROJECTED MILESTONES

Phase Completion Milestones:

RI: 201509
RD: 201609
RA(C): 201709

ROD/DD Approval Dates:

Completion Date of all RA(C) Activities: 2017

Completion Date of MMRP (including LTM phase): 2017

Cost

PRIOR YEAR FUNDING

$0

CURRENT YEAR FUNDING

$0

FUTURE YEAR FUNDING

TOTAL FUTURE REQUIREMENTS: $1,228K

TOTAL MMRP PROGRAM COSTS: $1,228K